

**Three New Achipterids from the Catskills of New York State,
U.S.A. (*Acari*; *Cryptostigmata*; *Oribatei*;
Oribatelloidea; *Achipteridae*)**

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RECEIVED FOR PUBLICATION APRIL 22, 1976

Abstract: *Parachipteria travéi*, *Achipteria catskillensis* and *Achipteria clarencei* from the Catskill Mountains of New York State are described and figured and comparisons in size and morphological features are made with described species of similar features.

The descriptions of new achipterids from the Smoky Mountains of North Carolina led to further studies of specimens of the group from the Catskills of New York State. Descriptions and figures of three new species follow.

*Parachipteria travéi*¹ n. sp.

Genus *Parachipteria* Van Der Hammen 1952 is characterized by the presence of large pteromorphs extending to near the tip of the rostrum and by a notogaster with distinct areae porose (Balogh 1972).

Type. *Oribata punctata* (Nicolet 1855).

Description of Parachipteria travéi n. sp.

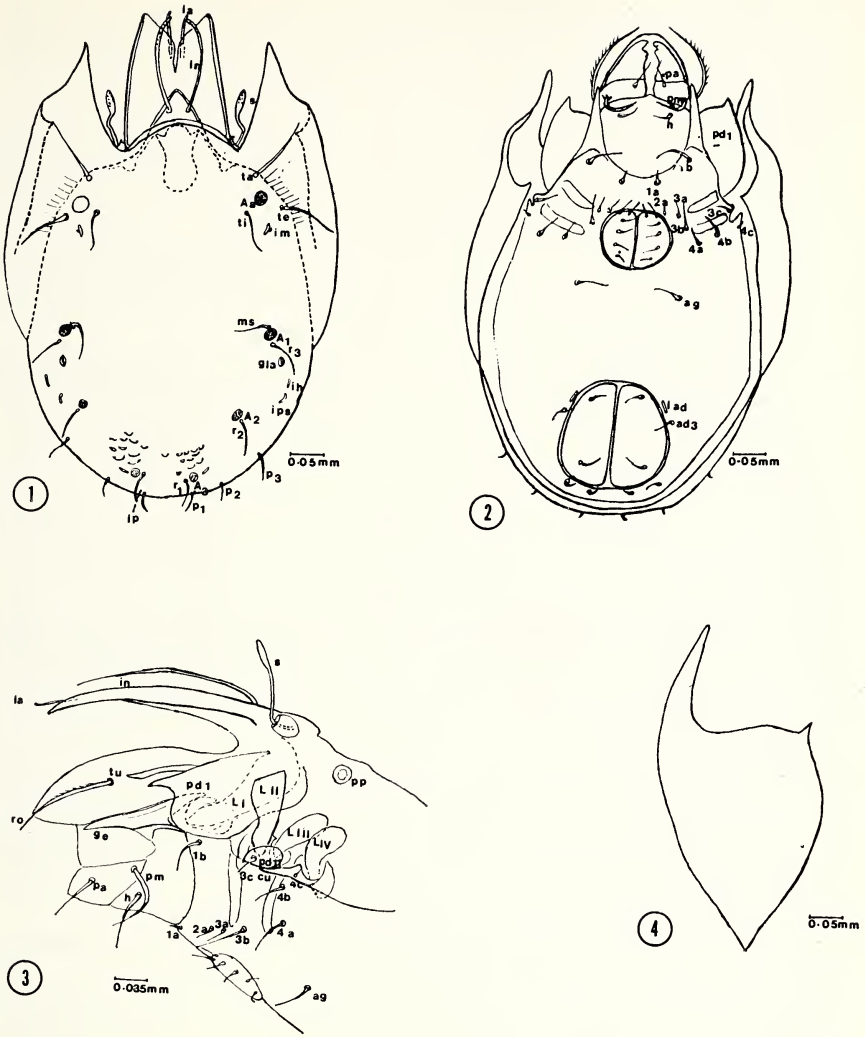
Color. Dark brown to black with the legs, the tips of the lamellae, and the anterior parts of the pteromorphs amber. (It is necessary to bleach specimens for study. Best results were obtained from specimens fixed in modified Berlese fluid, bleached for several days in a 10% solution of NaOH, washed and then examined in lactic acid.)

Size. Length—0.779 mm mean for 6 specimens. Range 0.760 mm to 0.825 mm. Breadth—0.579 mm mean for 6 specimens. Range 0.550 mm to 0.605 mm. Depth—0.510 mm mean for 6 specimens. Range 0.451 mm to 0.561 mm.

Prodorsum. The lamellae are long and broad and fused on the midline for less than a third their length. The outer (lateral) cuspis is much longer than the median cuspis. The lamellar setae are short, rough and pointed extending beyond the long lateral cusp. They follow the contour of the lamellae. They are shorter than the lamellae when seen in lateral view (fig. 3). The pedicel of the sensillus bends laterad from the brothridium, then following an outward curve projects forward ending in a head which is slightly rough and about twice the thickness of the pedicel. In lateral view the head of the sensillus is narrow.

Notogaster (fig. 1). In moving the cover glass in the study of specimens in lactic acid the

¹ *Parachipteria travéi* is named for Dr. J. Travé whose descriptions and figures of *Parachipteria petiti* and *Pseudochipteria magna* are sufficiently complete to serve as models for future work.



FIGS. 1-4. *Parachipteria travéi* n. sp. 1. Dorsal view. 2. Ventral view. 3. Ventral view of anterior end. 4. Lateral view of right pteromorph.

notogaster is easily separated from the body. Removal of the notogaster makes easier a study of the gnathosoma in lateral view and makes for greater ease and accuracy in the study of the legs. The areae porosae are distinct, and rounded or oval in shape. A distinct lenticulus is present. There are ten notogastral setae. Seta ms is very close to or actually in contact with porose area A₁ (fig. 1). The lyrifissures are typical.

Ventral surface (fig. 2). The setae pm named following Grandjean (1936) for *Bdella* sp. is thick and curved originating from a distinct protuberance on the prementum, the "adoral

sclerite" of Krantz (1971) or "les pieces maxillocoxales" of Grandjean. An apical tooth is present on the lateral tip of pedotectum 1. The epimeral setae are as follows: 1a, 1b; 2a; 3a, 3b and 3c; 4a, 4b and 4c. Setae 2a and 3a are small and equal in length; seta 3b is twice the length of 2a and 3a. These three setae are clustered close to one another. Seta 4c is very small. Seta 1c is not present.

The genital setae are typical for the genus. Setae g_4 and g_5 are only slightly farther apart than any of the other adjacent setae. Lyrifissure iad is anterior to adanal seta ad_3 and close against the border of the anal plate.

Lateral view (fig. 3). The pteromorphs are broad with a pronounced ventral spine on the margin of each (fig. 4). The basal parts of the legs are represented in figure 3 to show the position of the tutorium and pedotectums 1 and 11 relative to the legs. A porose area, pp, is present under the pteromorph. The tutorium has no free tip.

Legs. The projection of legs 1 and 11 between the lamellae and the rostrum makes it very difficult to determine the nature of the structures present and to work out the chaetotaxy of the legs. The chaetotaxy is quite similar to that of *P. savagei* (Nevin, 1976).

Setal formulae. trochanters 1-1-2-1; femora 5-5-3-2; genua 3-3-1-1; tibiae 4-4-3-3; tarsi 19-15-15-12.

Solenidial formulae. genua 1-1-1-1; tibiae 2-1-1-1; tarsi 2-2-0-0. Seta s of tarsus 11 is thick, branched and quite conspicuous.

Discussion. *Parachipteria travéi* is slightly larger than *Pseudochipteria magna* (Sellnick) but in general is in the same size range so that it has probably been confused with *P. magna* in this country. It is only by the very exact description and figures of *P. magna* by Travé (1960) that one is assured of differences. The chief differences between *Parachipteria travéi* and *Pseudochipteria magna* are:

1. the presence of distinct porose areas in the notogaster of *P. travéi*.
2. the head of the sensillus of *P. travéi* is almost smooth and less truncated at the tip than in *P. magna*.
3. seta pm is heavy and curved, projecting from a protuberance from the maxillocoxal plate in *P. travéi*.
4. epimeral seta, 1c, and lateral seta, ex, are absent in *P. travéi*.
5. the spine on the ventral margin of the pteromorph is much larger in *P. travéi* than in *P. magna*.

The tutorium of *P. travéi* lacks the lateral spine shown by Van Der Hammen (1952) for *P. willmanni*. The porose areas while distinct in *P. travéi* are not as large as those of *P. savagei* Nevin (1976).

Type locality. The type locality for all three species described was a strip of about 30 feet long along the Goulds-Fishes Eddy highway and approximately one mile north of the village of Fishes Eddy, Delaware County, New York. The area nearest the ditch was wet and supported growths of liverworts and spagnum moss. Close up the banks were species of fern mosses, then *Polytricum* and bracken ferns. Collections were made from specific microenvironments but there was such an overlap of species within these environments that no separate account within each microenvironment was attempted.

Type specimens were collected on August 16, 1975. Collections from the same area and containing the same species had been made in the summers of 1973 and 1974.

Holotypes and a few paratypes of each new species will be deposited in the New York

State Museum, Albany, New York. Additional paratypes will be deposited in the U.S. National Museum.

Achipteria catskillensis n. sp.

Genus *Achipteria* Berlese 1885.

Type species. *Achipteria coleopterata* (Linné, 1758) Van Der Hammen (1952).

Generic characters. Achipterids with large pteromorphs extending to near the tips of the rostrum; notogaster with sacculi.

Description of *Achipteria catskillensis* n. sp.

Color. Light reddish brown. It is not necessary to bleach specimens for study.

Size. Balsam mounts—mean for 13 specimens L—0.445 mm; Range 0.407 mm to 0.462 mm. W—0.326 mm; Range 0.297–0.374 mm.

Temporary mounts in lactic acid mean for 12 specimens; L—0.441 mm; Range 0.407 mm to 0.473 mm. W—0.289 mm; Range 0.253 mm to 0.352 mm.

Prodorsum (fig. 5). Lamellae fuse for a short distance on the midline. The cusps of the lamellae are nearly equal in length. Lamellar setae are smooth, pointed and bent ventrad at their tips. They originate from the ventral surface of the inner cusp near the point of fusion of the lamellae along the midline. The interlamellar setae are smooth as are both the heads and pedicels of the sensilli. The head of the sensillus is flat and pointed in dorsal view. The sensilli curve mesad over the pronotum extending to a point close to the point of fusion of the lamellae. They do not meet on the midline.

Notogaster (figs. 5, 7, and 8). A lenticulus is lacking. Sacculi are well developed. There are ten pairs of notogastral setae. Setae *ta* and *te* are at least twice as long as seta *ti*. Seta *r*₃ is close to sacculle *S*₁ while seta *ms* is more than five times the distance from *S*₁.

Ventral surface (fig. 6). Seta *pm* is a heavy seta but is not U-shaped. Pedotectum 1 lacks an apical denticle. Epimeral setae 1*c* and 4*c* are lacking. Setae 2*a* and 2*b* are very small. Adanal seta *ad*₃ is very close to the posterior end of the lyrifissure *iad*.

Lateral view (fig. 8). The pteromorphs lack a ventral spine. The custodium is rather blunt.

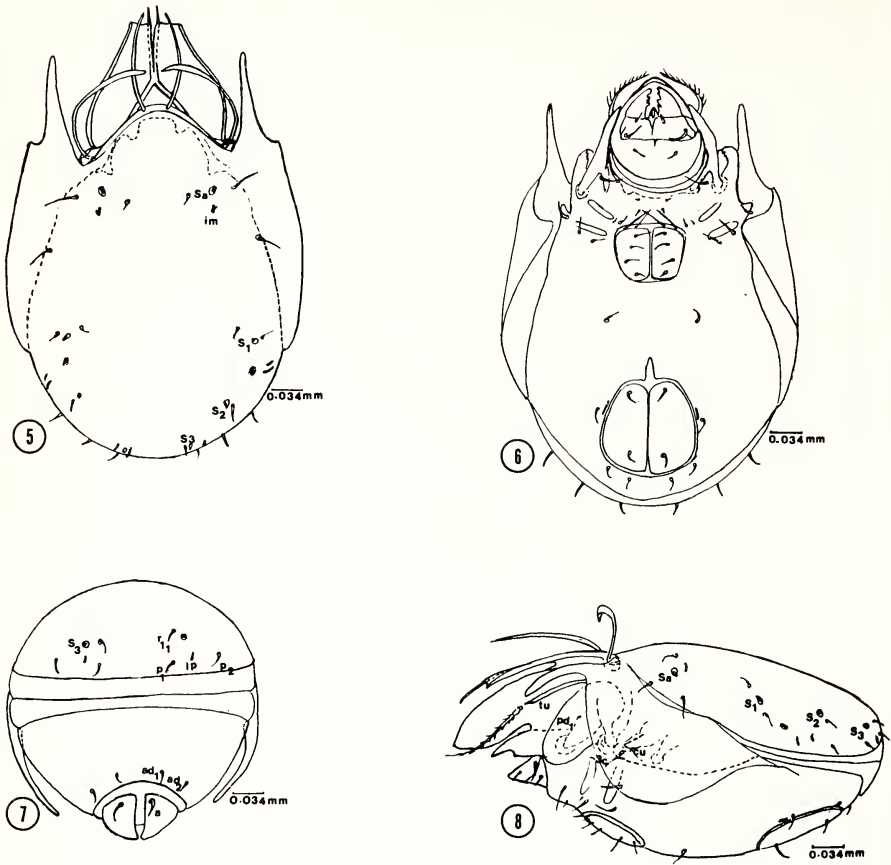
Legs. Chaetotaxy.

Setal formulae. trochanters 1-1-2-1; femora 5-5-3-2; genua 3-3-1-1; tibiae 4-4-3-3; tarsi 20-15-15-12.

Solenidial formulae. genua 1-1-1-1; tibiae 2-1-1-1; tarsi 2-2-0-0. The spur on genua 1 and 11 is of moderate length and thickness.

Discussion. The presence of a lenticulus is given by Balogh (1972) as one characteristic of the genus *Achipteria*. This feature seems to hold for most of the species but not for *A. catskillensis*. There is a lighter area in the position for a lenticulus but no distinct lenticulus. The tutorium does not show in most specimens. This is probably due to the fact that the notogaster and pteromorphs are not readily removed and that leg 1 extends over this area. The spurs on genua 1 and 11 are proportionally smaller than in related species and genera.

Achipteria catskillensis is smaller than other species of the genus. It averages smaller than *A. italica* (Oudemans 1913). Oudemans (1927) gives measurements for *A. italica* of 0.488 mm by 0.370 mm; Travé (1960) gives lengths of 0.490 mm to 0.580 mm. *A. catskillensis* is readily separated from *A. italica* of Oudemans by the sensillus which bends mesad over the



FIGS. 5-8. *Achipteria catskillensis* n. sp. 5. Dorsal view. 6. Ventral view. 7. Rear view. 8. Lateral view.

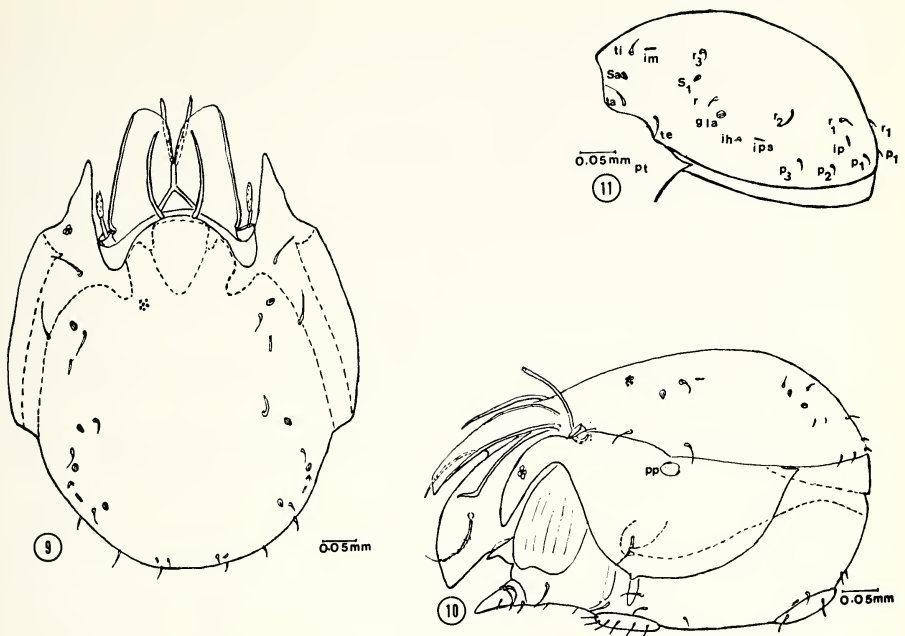
prodorsum while in *A. italica* the much shorter sensillus projects forward. The sensillus of *A. catskillensis* appears similar to that of Sellnick's *Notaspis bellus*. Sellnick gives the size as 0.395 mm by 0.286 mm. This is smaller than *A. catskillensis*. But according to Van Der Hammen (1952) *N. bellus* of Sellnick becomes *Parachipteria bella* (Sellnick 1913) because of the presence of distinct porose areas on the notogaster. Travé (1960) agrees with this classification. *A. catskillensis* possesses distinct notogastral sacculi.

The number of setae (20) for tarsus 1 of *Achipteria catskillensis* agrees with the numbers given by Travé for *Parachipteria petiti* and for *Pseudochipteria magna* but differs from figures given for *Parachipteria savagei* Nevin (1976) and for *Parachipteria heintoogensis* Nevin (in preparation).

Achipteria clarenci n. sp.

(Figures 9-11)

Color. Reddish brown to amber with the legs, the apices of the lamellae and the anterior third of the pteromorphs light amber.



FIGS. 9-11. *Achipteria clarencei* n. sp. 9. Dorsal view. 10. Dorsal view. 11. Notogaster at angle to show setae.

Size. L—0.664 mm mean for 7 specimens. Range 0.635 mm to 0.693 mm. W—0.522 mm mean for 7 specimens. Range 0.473 mm to 0.561 mm.

Integument. The cuticula particularly that of the pteromorphs and the dorsal surface of the lamellae is coarsely punctate. The cuticula of other parts of the body is more finely punctate.

Prodorsum. The lamellae are fused for a short distance (measured at 0.032 mm in one specimen), then separate. The medial margin of each lamella is slightly shorter than the outer and rounds out to it. In many specimens as seen in dorsal view the lamellae appear to be truncated at their tips. The smooth lamellar setae originate on the ventral surface of the lamellae along the mesial line at a point about halfway between the point of fusion of the lamellae and the apices of the lamellae. A thickening extends from the point of origin of each lamellar seta to the point of fusion of the lamellae. The interlamellar setae are also smooth. They are fairly short not reaching to the tip of the rostrum. Both the head and the pedicel of the sensillus are spinous. The sensilli are short. They extend forward between the legs and the gnathosome proper.

Notogaster. A triangular shaped lenticulus with the base along the anterior margin of the notogaster shows in dark colored specimens. In light colored specimens and in some cleared specimens the lenticulus may not show. There are ten pairs of notogastral setae, all short for achipterids. Setae ta and te are longer than the other notogastral setae. The other notogastral setae are barely visible under 100 \times magnification. Sacculi Sa, S₁ and S₂ are present but are quite indistinct. Sacculus S₃ could not be distinguished in any specimen. The

arrangement of certain notogastral setae in reference to the position of the sacculi is specific. Seta m_s is mesad to sacculus S_1 . Seta r_2 is posterior and lateral to S_1 . The distance of seta r_2 from S_1 is double the distance of seta m_s from the same sacculus. Sacculus S_2 is small and quite indistinct. The other setae and fissures are typical of achipterids.

Ventral surface. Seta pm is large and curved. Of the epimeral setae 1b appears unusually long, setae 1b, 3a, 3c, 4a and 4b are of about equal lengths, setae 1a, 2a and 3b are very small. Setae 3a and 4c are lacking.

The genital, aggenital, adanal and anal setae are normal for the genus. Adanal seta ad_3 is located opposite the midpoint of the longitudinal axis of the anal plate. Lyrifissure iad is adjacent to the margin of the anal plate at a point one third the distance back from the anterior border of the plate. Seta ad_3 is located opposite the midpoint of the longitudinal axis of the anal plate.

Lateral view. The tutorium has a short free tip. Pedotectum 1 lacks a spine. The pteromorphs possess a denticle on the midventral margin.

Legs. Setal formulae. trochanters 1-1-2-1; femora 5-5-3-2; genua 3-3-1-1; tibiae 4-4-3-3; tarsi 20-15-15-12.

Solenidial formulae. genua 1-1-1-1; tibiae 2-1-1-1; tarsi 2-2-1-0.

Discussion. *Achipteria clarencei* is a member of the genus *Achipteria* but because of the absence of sacculus S_3 and the poor development of the other notogastral sacculi the species seems to be intermediate between the genus *Achipteria* and *Pseudochipteria*.

The presence of a punctated or granular cuticula is definitely a characteristic of the new species, but the degree of punctation in separating species is a valid taxonomic feature only when like colored and like treated specimens are compared. The cuticular granularity is pronounced in untreated dark specimens of *A. clarencei*.

Staining with alcoholic picric acid makes easier the task of identification of the setae of the legs in working out the setal formulae.

Achipteria sellnicki Van Der Hammen 1952 and *Achipteria oudemansi* Van Der Hammen 1952 are in the size range with *A. clarencei*. Both of the above species bear a denticle on pedotectum 1. The denticle is curved in *A. sellnicki*, straight in *A. oudemansi*. The absence of a denticle on pedotectum 1 separated *A. clarencei* not only from the above species but also from *A. nitens* and from *Pseudochipteria magna* (Sellnick). The size of *A. nitens* as given by Van Der Hammen (1952) as 0.700 mm to 0.780 mm in length, by 0.540 mm to 0.560 mm in breadth, also differentiates this species from the new species. Van Der Hammen described the notogastral setae of *A. nitens* as long "especially, the two pairs near the pteromorphae." The notogastral setae of *A. clarencei* are short. The tips of the lamellae are rounded in *A. clarencei* in contrast to the long pointed outer cusp of the lamellae in *A. oudemansi*.

In addition to the three new species of achipterids several specimens of *Dentachipteria ringwoodensis* and a single specimen of *Dentachipteria highlandensis* were collected at the location mentioned above. *Dentachipteria ringwoodensis* appears to be a widespread and common species and should be considered the type species for the genus. This species from the Catskill region appears to be more variable than the specimens originally described from Ringwood, New York. Most specimens were black with only the legs and the apices of the lamellae amber colored. Many specimens were found with fewer than seven denticles on the pteromorphs. Among the originally described speci-

mens the number of denticles varied from seven to twenty-one. The finding of another specimen of *D. highlandensis* very distinct from *D. ringwoodensis* confirms the former as a valid species.

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BOOK REVIEW

Moths of Australia. Bernard D'Abrera. 1974. Lansdowne Press, Melbourne. 85 pp., many color and a few black and white illustrations, \$12.95 (Australian).

This small book includes material of the chief families of Australian moths, illustrated by over 300 species. A good many families, especially of obscure microlepidoptera, are not included. The species included were chosen because of their commonness, striking appearances or economic importance, or because they have some special interests. The illustrations are excellent. Most are of set specimens, but there are numbers of the extremely fine photographs that the author is noted for, of living individuals. A number of excellent larval photographs are included. A lengthy preliminary section covers in a simple way moth structures and life histories, scientific names and classification, and directions and diagrams for dealing with specimens. We like the author's emphasis on rearing moths instead of merely collecting them. The text portions contain many interesting facts about habits and life histories. All in all, this is a worthwhile book for beginners, and should do much to interest young people in particular—by no means only in Australia.

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